

What is claimed is.

1           1. A content and application delivery system comprising:

2           an origin web site having an origin web server, said origin web server  
3           having a first memory for storing a first version of a web content;

4           an edge server communicating via a data network with said origin web  
5           server and a policy control server;

6           said edge server having a second memory for storing a second version of  
7           said web content and deriving said second version from said origin web  
8           server according to directives of a service policy that resides at said pol-  
9           icy control server, said edge server downloading said directives of said  
10          service policy from said policy control server via said data network;

11          wherein a request of a user directed to said origin web site for a re-  
12          source from said web content is redirected to said edge server, and respon-  
13          sive to said request a third version of said web content is provided to the  
14          user from said edge server, said third version being derived from said sec-  
15          ond version in accordance with said directives of said service policy.

1           2. The system according to claim 1, wherein said policy control server  
2           is said origin web server.

1           3. The system according to claim 1, wherein said directives of service  
2           policy are specified using an XML based language.

1           4. The system according to claim 3, wherein said directives of said  
2           service policy include a description of resources of said origin web site.

1           5. The system of claim 4 wherein said description of resources is  
2           specified using a resource definition framework, said resource definition  
3           framework having extensions comprising protocol, type, size, encoding con-  
4           vention, creation time, expiration time, keyword, target groups, an alter-  
5           nate URL for fetching said resources, and a location of a code for creating  
6           a dynamic resource;

7           wherein said description of resources includes at least one of said ex-  
8           tensions.

1           6. The system according to claim 4 wherein said directives of said  
2           service policy include a description of users at a target site.

1           7. The system of claim 1 wherein communication between said edge server  
2 and at least one of said policy control server and said origin web server is  
3 effected using an http protocol or an https protocol.

1           8. The system of claim 1, wherein said origin web site comprises a plu-  
2 rality of origin web sites, and said first version is distributed in said  
3 plurality of origin web sites, defining thereby a distributed first version,  
4 said second version being derived from said distributed first version.

1           9. The system of claim 1 wherein said policy control server comprises a  
2 plurality of web servers.

1           10. The system of claim 9, wherein said web servers are said origin web  
2 server, said edge server and a server located at a third party site.

1           11. The system of claim 1, wherein said directives comprise a descrip-  
2 tion of an edge server group associated with said origin web site.

1           12. The system of claim 11, wherein said description of an edge server  
2 group includes information concerning at least one of an organization type,  
3 geographical region, language, business relation to said origin web site,  
4 edge server hardware capabilities, edge server software capabilities, edge  
5 server security specifications, internet location and internet connection  
6 speed of members of said edge server group.

1           13. The system of claim 1, wherein said second version is derived from  
2 said first version by the steps of:

3           selecting resources from said first version according to predetermined  
4 criteria comprising at least one of a resource URL, time of resource genera-  
5 tion, length, keyword list, target groups, data format, and key;

6           transforming a selected resource in said second memory responsive to  
7 said directives, wherein said directives comprise a description of an edge  
8 server group associated with said origin web site to define a transformed  
9 selected resource; and

10          storing said transformed selected resource in said second memory.

1           14. The system according to claim 13, wherein said second memory com-  
2 prises a cache memory.

1        15. The system according to claim 13, wherein said predetermined crite-  
2        ria comprise a presence of updated resources in said first version that are  
3        absent in said second version.

1        16. The system according to claim 1, wherein said service policy dif-  
2        ferentiates a resource of said first version from a resource of said second  
3        version according to an attribute of said edge server and an attribute of at  
4        least one of said first resource and said second resource.

1        17. The system according to claim 16, wherein said attribute comprises  
2        at least one of a caching priority, caching validation, a caching invalida-  
3        tion, preposition at a predetermined time and preposition upon an occurrence  
4        of a predetermined event.

1        18. The system according to claim 1, wherein said service policy dif-  
2        ferentiates a resource of said second version from a resource in said third  
3        version according to at least one of attribute of the user, attribute of the  
4        edge server, request time and attribute of the resource.

1        19. The system according to claim 1, wherein one of said directives of  
2        said service policy instructs said edge server to redirect said request of  
3        said user to another web resource.

1        20. The system according to claim 19, wherein said another web resource  
2        is located at said origin web site.

1        21. The system according to claim 19, wherein said another web resource  
2        is external to said origin web site.

1        22. The system according to claim 19, wherein said request is redi-  
2        rected by sending an http redirect instruction from said edge server to said  
3        user.

1        23. The system according to claim 19, wherein said request is redi-  
2        rected to another resource by said edge server by modifying a URL portion of  
3        said request and loading the resource from the origin site.

1        24. The system according to claim 19, wherein said request is redi-  
2        rected according to an attribute of the user.

1        25. The system according to claim 1, wherein at least two of said first  
2 version, said second version, and said third version are identical.

1        26. The system according to claim 1, wherein a group of resources of  
2 said first version is stored in a compressed form, and a corresponding group  
3 of resources of said second version is uncompressed by said edge server ac-  
4 cording to said directives.

1        27. The system according to claim 26, wherein said group of resources  
2 of said first version is stored in a packed form, and said corresponding  
3 group of resources of said second version is unpacked by said edge server  
4 according to said directives.

1        28. The system according to claim 1, wherein a resource of said first  
2 version is in an encrypted form, and a corresponding resource of said second  
3 version is decrypted by said edge server according to said directives.

1        29. The system according to claim 1, wherein a resource of said first  
2 version is communicated by a first protocol to form a resource of said sec-  
3 ond version, wherein said resource of said second version is communicated by  
4 a second protocol to form a resource of said third version.

1        30. The system according to claim 29, wherein said first protocol is  
2 file transfer protocol and said second protocol is http.

1        31. The system according to claim 29, wherein said first protocol is  
2 identical to said second protocol, wherein parameters of said first protocol  
3 differ from parameters of said second protocol.

1        32. The system according to claim 1, wherein said resource has an ac-  
2 tion defined therein, and said edge server performs said action.

1        33. The system according to claim 32, wherein said action comprises  
2 execution of an application.

1        34. The system according to claim 33, wherein said application is a web  
2 form processing application;

3 wherein in a first step said edge server communicates a form to be com-  
4 pleted by the user; and

5 in a second step parameters of said form are transmitted from the user  
6 to said edge server.

1 35. The system according to claim 33, wherein said application is a  
2 user password processing application;

3 wherein in a first step said edge server triggers a password template  
4 to be filled by the user; and

5 in a second step form parameters of said password template are trans-  
6 mitted from the user to said edge server.

1 36. The system according to claim 33, wherein instructions of said ap-  
2 plication cause said edge server to identify an attribute of said user that  
3 is included in said request and to return resources in said second memory of  
4 said edge server that are associated with a URL of said request and said at-  
5 tribute of said user.

1 37. The system according to claim 36, wherein said attribute is identi-  
2 fied in a request header having a cookie, and said resources are defined in  
3 said directives of said service policy, wherein said directives are stored  
4 in said edge server.

1 38. The system according to claim 33, wherein said application is a  
2 user password processing application;

3 wherein said edge server forwards said request to said origin web  
4 server and delivers a user name and a user password to said origin web  
5 server;

6 wherein responsive to said user name and said user password said re-  
7 source is transmitted by said origin web server to said edge server.

1 39. The system according to claim 38, wherein said resource is held in  
2 a cache by said edge server.

1 40. The system according to claim 33, wherein said application is a web  
2 common gateway interface extension or a Java servlet.

1        41. The system according to claim 1 wherein the user is a member of a  
2 group, and responsive to said request said edge server authenticates a mem-  
3 bership of the user in said group.

1        42. The system according to claim 1, wherein said edge server is in  
2 communication with an external web server via said data network, and a por-  
3 tion of said second version is obtained from said external web server ac-  
4 cording to said service policy.

1        43. The system according to claim 1, wherein said resource is received  
2 by said edge server from said origin web server and stored therein, wherein  
3 said resource is modified prior to being stored in said edge server respon-  
4 sive to attributes of said edge server, said user, and said resource that  
5 are specified in said directives of said service policy.

1        44. The system according to claim 43, wherein said resource is modified  
2 by replacement thereof with a second resource that is local to said edge  
3 server.

1        45. The system according to claim 43, wherein said resource is modified  
2 by combination thereof with a second resource that is local to said edge  
3 server.

1        46. The system according to claim 43, wherein said resource is a web  
2 page that is modified by an operation consisting of at least one of frame  
3 insertion, textual or graphic insertion, html code insertion, link modifica-  
4 tion, embedded object modification, and adaptation of said web page to re-  
5 quirements of a browser.

1        47. The system according to claim 46, wherein a first URL in an embed-  
2 ded link of said web page is modified to define a second URL having a domain  
3 name value such that a routing of said request using said second URL is di-  
4 rected to said edge server.

1        48. The system according to claim 1, wherein said request is modified  
2 according to edge server, user and resource attributes that are specified in  
3 said directives.

1        49. The system according to claim 48, wherein said request is modified  
2 by an operation consisting of at least one of an addition of user informa-  
3 tion to an http header of said request, adding a cookie to said request,  
4 modifying a URL of said request, modifying form content of said URL, modify-  
5 ing a body of said request, and adding password information to said URL.

1        50. The system according to claim 48 wherein said resource comprises a  
2 first URL, and said request is modified by an operation comprising modifying  
3 said first URL to define a second URL having a domain name value such that a  
4 routing of said request using said second URL omits said edge server.

1        51. The system according to claim 48, wherein said resource comprises a  
2 first URL, wherein in a first operation said first URL is modified to define  
3 a second URL having a domain name value such that a routing of said request  
4 using said second URL is directed to said edge server, and in a second op-  
5 eration said second URL is modified to define a third URL having a domain  
6 name value such that a routing of said request using said third URL omits  
7 said edge server.

1        52. The system according to claim 1 further comprising a DNS system as-  
2 sociated with said data network, and said request is redirected by said DNS  
3 system;

4        wherein said DNS system resolves a domain name that is included in  
5 said request for said resource, and said DNS system provides the user with  
6 an address of one of said origin web server, another web server that can  
7 serve the resource and said edge server.

1        53. The system according to claim 52, wherein said service policy dif-  
2 ferentiates said first version from said second version according to at  
3 least one attribute of the user, attribute of the edge server, request time  
4 and attribute of the resource.

1        54. The system according to claim 52, wherein said service policy dif-  
2 ferentiates said second version from said third version according to at  
3 least one of an attribute of said user, an attribute of said edge server, a  
4 request time and an attribute of the resource.

1        55. The system according to claim 52, wherein at least two of said  
2 first version, said second version, and said third version are identical.

1        56. The system according to claim 52, wherein said first version is  
2 stored in a compressed form, and said second version is uncompressed by said  
3 edge server.

1        57. The system according to claim 52, wherein said resource has an ac-  
2 tion defined therein, and said edge server performs said action.

1        58. The system according to claim 57, wherein said action comprises  
2 execution of an application.

1        59. The system according to claim 52, wherein the user is a member of a  
2 group, and responsive to said request said edge server authenticates a mem-  
3 bership of the user in said group.

1        60. The system according to claim 52, wherein said edge server is in  
2 communication with an external origin server via said data network, and a  
3 portion of said second version is obtained from said external origin server  
4 according to said service policy.

1        61. The system according to claim 52, wherein said second version is  
2 obtained by said edge server from said origin web server according to a  
3 modification of a URL, said modification designating a portion of said first  
4 version in said origin web server.

1        62. A computer implemented method of electronic commerce, comprising  
2 the steps of:

3        storing a first version of web content in a first server;  
4        implementing a service policy as control instructions that reside in  
5 said first server;

6        transmitting said control instructions from said first server to a sec-  
7 ond server, wherein said control instructions reside in said first server;

8        responsive to said control instructions, storing a second version of  
9 said web content in said second server;

10        redirecting a first request of a first user directed to said first  
11 server for a first resource of said web content to said second server;

12        providing said first user with a third version of said web content from  
13 said second server;



14        redirecting a second request of a second user directed to said first  
15        server for a second resource of said web content to said second server in  
16        accordance with said control instructions;

17        providing said second user with a fourth version of said web content  
18        from said second server in accordance with said control instructions; and

19        associating said first user with said second user via a communication  
20        path extending through said second server.

1        63. The method according to claim 62, wherein said third version and  
2        said fourth version are identical.

1        64. The system according to claim 62, further comprising the step of  
2        differentiating said first version from said second version according to an  
3        attribute of said second server.

1        65. The system according to claim 62, further comprising the step of  
2        differentiating said second version from said third version according to a  
3        criterion consisting of at least one of an attribute of said user, an at-  
4        tribute of an edge server, a request time and an attribute of the resource.

1        66. The system according to claim 62, further comprising the steps of:  
2        compressing said first version,  
3        downloading said first version from said first server to said second  
4        server;  
5        uncompressing said first version in said second server; and  
6        deriving said second version from said first version in said second  
7        server.

1        67. The system according to claim 62, wherein said first resource per-  
2        forms an action defined therein, said action comprising the step of execut-  
3        ing of an application.

1        68. The system according to claim 67, wherein said step of executing an  
2        application comprises:

3        communicating a form to be completed by said first user; and  
4        accepting parameters of said form from said first user.

1        69. The system according to claim 67, wherein said step of executing an  
2        application comprises:

3 triggering a password template to be filled by said first user; and  
4 accepting parameters of said password template from said first user.

1 70. A domain name system, comprising:  
2 a regional DNS server that is non-authoritative for an external domain  
3 name zone;  
4 a root DNS server; and  
5 an authoritative DNS server for said external domain name zone, said  
6 regional DNS server, said root DNS server, and said authoritative DNS server  
7 being linked via a data network;  
8 wherein in response to a DNS address resolution request for a name  
9 within said external domain name zone received from a client, said regional  
10 DNS server effects a first resolution of said DNS address resolution request  
11 into a first network address and communicates said first network address  
12 to said client, said first network address being different from a second  
13 network address that is configured in said authoritative DNS server, wherein  
14 said second network address comprises a second resolution of said DNS ad-  
15 dress resolution request in said external domain name zone.

1 71. The domain name system according to claim 70, wherein said first  
2 resolution effected by said regional DNS server is controlled by a policy  
3 control server that is linked to said data network.

1 72. The domain name system according to claim 70, further comprising an  
2 Edge DNS server linked to said data network.

1 73. The domain name system according to claim 72, wherein said regional  
2 DNS server conducts a zone forwarding procedure to said Edge DNS server for  
3 a domain name corresponding to said first resolution.

1 74. The domain name system according to claim 73, wherein said first  
2 resolution effected by said regional DNS server is controlled by a policy  
3 control server that is linked to said data network.

1 75. The domain name system according to claim 73, wherein responsive to  
2 said zone forwarding procedure said Edge DNS server returns said first  
3 resolution of said DNS address resolution request to said regional DNS  
4 server.

1        76. The domain name system according to claim 72, wherein said first  
2 network address is registered in said Edge DNS server in response to a DNS  
3 cache registration operation.

1        77. The domain name system according to claim 72, wherein a resolution  
2 table of said Edge DNS server is automatically derived from said regional  
3 non-authoritative DNS server responsive to a directive of said policy con-  
4 trol server.

1        78. The domain name system according to claim 72, wherein said Edge DNS  
2 server comprises a plurality of Edge DNS servers, wherein in an event of a  
3 failure of a first one of said Edge DNS servers, a second one of said Edge  
4 DNS servers is substituted therefor.

1        79. A method of domain name resolution, comprising the steps of:  
2        receiving a DNS address resolution request via a data network from a  
3 client for a name within an external domain name zone in a regional DNS  
4 server that is non-authoritative for said external domain name zone;  
5        obtaining a first resolution of said DNS address resolution request  
6 from an authoritative DNS server for said external domain name zone via said  
7 data network, defining a first network address, wherein said authoritative  
8 DNS server is linked to a root DNS server in said data network;  
9        effecting a second resolution of said DNS address resolution request in  
10 said regional DNS server, defining a second network address, wherein said  
11 second network address is different from said first network address; and  
12        communicating said second network address to said client via said data  
13 network.

1        80. The method according to claim 79, further comprising the steps of:  
2        linking a policy control server in said data network; and  
3        controlling said second resolution according to a policy of said policy  
4 control server that corresponds to said name in said external domain name  
5 zone.

1        81. The method according to claim 80, wherein said policy control  
2 server resides in an origin server that corresponds to said name in said ex-  
3 ternal domain name zone.

1        82. The method according to claim 80 wherein said policy controls said  
2        second resolution by specifying a domain name according to an operational  
3        criterion of an origin server in said data network.

1        83. A method of domain name resolution, comprising the steps of:  
2        receiving a DNS address resolution request via a data network from a  
3        client for a name within an external domain name zone in a regional DNS  
4        server that is non-authoritative for said external domain name zone, wherein  
5        an authoritative DNS server is accessible in said data network by said re-  
6        gional DNS server, and said name is resolvable in said authoritative DNS  
7        server to effect a first resolution thereof, defining a first network ad-  
8        dress, and said authoritative DNS server is linked to a root DNS server in  
9        said data network;

10       forwarding said DNS address resolution request from said regional DNS  
11       server to an Edge DNS server via said data network;

12       instructing an edge server in said data network to periodically write  
13       a regional domain name DNS resolution into a resolution cache of said Edge  
14       DNS server, wherein a time-to-live interval of said regional domain name DNS  
15       resolution exceeds an interval between successive performances of said step  
16       of writing;

17       responsive to said step of periodically writing, effecting a second  
18       resolution of said DNS address resolution request in said Edge DNS server,  
19       defining therein a second network address, wherein said second network ad-  
20       dress is different from said first network address;

21       communicating said second network address from said Edge DNS server to  
22       said regional DNS server via said data network; to define an actual network  
23       address; and

24       communicating said actual network address from said regional DNS server  
25       to said client via said data network.

1        84. The method according to claim 83, further comprising the steps of:  
2        in an event of failure of said edge server to perform said step of pe-  
3        riodically writing, obtaining said actual network address by querying said  
4        root DNS server to obtain said first resolution ; and  
5        storing said first resolution in said Edge DNS server, to define said  
6        actual network address therein as said first network address.

1        85. The method according to claim 83, further comprising the steps of:  
2        linking a policy control server in said data network; and

3       controlling said second resolution according to a policy of said policy  
4       control server.

1       86. The method according to claim 85 wherein said second resolution is  
2       effected by an operation consisting of at least one of providing a local  
3       edge server network address, providing an origin site network address, and  
4       altering a time to live value for a cached resolution.

1       87. The method according to claim 85, wherein said policy control  
2       server resides in an origin server that corresponds to said name in said ex-  
3       ternal domain name zone.

1       88. A method of domain name resolution, comprising the steps of:  
2       receiving a DNS address resolution request via a data network from a  
3       client for a name within an external domain name zone in an regional DNS  
4       server that is nonauthoritative for a region said external domain name zone;  
5       wherein said name is mapped at an authoritative DNS server to a first  
6       network address, and said regional DNS server forwards said request to an  
7       Edge DNS server that is non-authoritative for said external domain name  
8       zone, said Edge DNS server defining a second network address, wherein said  
9       second network address is different from said first network address;  
10       communicating said second network address from said Edge DNS server to  
11       said regional DNS server via said data network; and  
12       communicating said second network address from said regional DNS server  
13       to said client via said data network.

1       89. The method according to claim 88, further comprising the steps of:  
2       linking a policy control server in said data network; and  
3       controlling said second network address according to a policy of said  
4       policy control server.

1       90. A method of domain name resolution, comprising the steps of:  
2       using an edge server, inserting registrations into an Edge DNS server  
3       for a name of a domain via a data network, wherein said Edge DNS server is  
4       configured as a master DNS server for said domain;  
5       receiving in a regional DNS server in said data network a DNS address  
6       resolution request via said data network from a client for said name of said  
7       domain;

8 responsive to one of said registrations, effecting a resolution of said  
9 DNS address resolution request in said regional DNS server, to define a net-  
10 work address; and  
11 communicating said network address from said regional DNS server to  
12 said client via said data network.

1 91. The method according to claim 90, further comprising the steps of:  
2 testing unavailability of said Edge DNS server; and  
3 responsive to said step of testing, redirecting entries of said re-  
4 gional DNS server to one of a root DNS server and an origin server in said  
5 data network.